

**FREE WIFI ACCESS
IN MANCHESTER**
PAGE 196

**NIKE+IPOD USERS
'VULNERABLE'**
PAGE 197

**MEMORY FASTER
THAN FLASH**
PAGE 198

**THE DIGITAL
RIGHTS STUFF**
PAGE 199

Microsoft says music protection is bad

Microsoft and record company executives are having second thoughts about digital rights management (DRM) software. Their reasoning is that copy protection systems irritate customers and fail to stop piracy. It also creates an opportunity for rivals to corner the market. In the case of iTunes, content protection has helped to increase Apple's domination in music downloads. Apple's iTunes uses a proprietary DRM system called FairPlay, which is incompatible with other products and means that users need an iPod to play music that has been bought from iTunes.

Bill Gates recently admitted that DRM systems, which Microsoft and other companies employ to limit people's ability to copy music and video, are alienating customers. Speaking to a group of high-profile bloggers, Gates observed that "no-one has done it [DRM] right" and he conceded that it is more convenient to "just buy a CD and rip it" on your computer than to download copy-protected music. DRM "causes too much pain for legitimate buyers," said Gates.

Gates' comments coincide with research that indicates the average iPod owner stores only around 22 paid-for downloads on their portable music player. This is despite the fact that iTunes users have to contend with relatively benign DRM limitations and are free to burn audio CDs of any their songs, protected or not, from within iTunes. The rest of their music has either been ripped from CDs or downloaded illegally.

Gates' aversion to DRM marks a significant change of heart. Microsoft's Palladium technology is designed to put hardware-level restrictive DRM at the heart of Windows and Windows Media Player. Microsoft originally intended to replace the freely copyable MP3 format with its own DRM-enforced WMA format.

Microsoft's new Zune player has been criticised for the crippling limits it places on anyone who uses its

much-touted WiFi song-swapping feature. Microsoft staffers have blamed the inclusion of this protection on the refusal by record companies to license content unless stringent DRM is in place.

Gates' statement may well reflect his frustration at having to toe the line for content providers. However, it may also be due to Apple and its FairPlay DRM, which locks customers into the winning combination of the iTunes service and the iPod portable music player.

Recently EMI's Blue Note label decided to avoid DRM when it released the latest single by Norah Jones. Industry analysts believe that this non-protected commercial release, in regular MP3 format, is the first sign of a rethink among music business executives.

The Jones single is available for download from Yahoo!'s music site. David Goldberg, vice-president and general manager of Yahoo! Music, told *The Wall Street Journal* that as most CDs are not copy-protected, customers are reluctant to download music that is. He added that EMI realised the MP3 format would make the single available to owners of any kind of music player without having to deal with Apple or Microsoft.

• See *News Analysis*, page 199.



▲ Bill Gates' apparent change of heart on DRM could have far-reaching repercussions for the music industry

Worm attacks MySpace

MySpace has deleted hundreds of user accounts in an attempt to counter a virulent virus attack. The virus, which is a worm, exploits the way in which MySpace and Apple's QuickTime media player can be made to interact.

Visiting an infected MySpace profile triggers an embedded QuickTime movie, which in turn runs a JavaScript routine. This creates a fake set of menus at the top of the MySpace page. Clicking on one of the fake menu options takes the unwitting user to a fake MySpace login page. When the user attempts to log into MySpace, their name and password are captured, handing over control of the users' profile. The worm propagates itself by embedding the QuickTime movie on the profile page of the infected account, and

uses the profile to mail spam to the MySpace user's 'friends'.

The spam message headings include the headers "What else is there to do on a Sunday?", "You better not forget about this", "Hehe that was so funny", "Better see this one last time lol", "OMG did you see this last nite?" and "Who's coming to the party tonight?"

According to one security group, MySpace's general instability has contributed to the spread of the attack. "Due to MySpace.com's seemingly random tendency to expire user sessions or log users out, a user being presented with the MySpace login page is not out of the ordinary and does not raise much suspicion on the part of the victim," observed the Texas-based security group Computer Academic Underground.

MySpace's popularity, with over 70 million registered users, makes it and other social networks vulnerable to a new generation of malware. Security analysts believe that people are much more likely to open a bogus MySpace email from a 'friend' than they are to respond to an email from someone they don't know, which makes it easier for malware to propagate itself across social networks.

"User-created content [in social networks] is definitely a big security shift," said Dan Hubbard, director for security and technology research at security outfit WebSense. "I don't even think the companies have really thought about how to control things they don't have control over." MySpace declined to comment on the worm attack.



Internet Explorer suffers in new browser wars

The browser wars are back as Internet Explorer faces stiff competition from Mozilla's free alternative, Firefox. The open-source web browser has become significantly more popular over the past few months, and in some countries it is the choice of four out of 10 internet users.

According to French research outfit XiTi Monitor, Mozilla's Firefox achieved an overall market share of 23.2 per cent across Europe in November 2006. The browser has become increasingly popular in all but two European countries, the Czech Republic and Slovakia.

The results indicate a dramatic setback in the fortunes of Microsoft's Internet Explorer, which until recently enjoyed a market share of over 90 per cent. This was due in part to its tight integration with Windows and that it comes preinstalled on most PCs.

During November more than 40 per cent of people tracked in Slovenia used Firefox, while in larger countries such as Germany, Poland and Finland, more than a third of internet users preferred Firefox to Internet Explorer. Firefox's rise was less marked in the UK, with only 15.8 per cent using the browser.

In the US Firefox claimed a 14.5 per cent market share, which although lower than Europe's figure is still a remarkable achievement for an open-source browser developed by volunteers and largely promoted by word of mouth.

Another internet research company, Net Applications, also recorded gains for Firefox and reports that during November 2006 Firefox use reached 13.5 per cent for all browsers worldwide, a figure that is up from 12.96 per cent in October. Meanwhile, Internet Explorer's share dropped from 81.28 per cent during October to 80.56 per cent during November. Based on current trends, Microsoft's browser will dip below an 80 per cent market share for the first time in six years when December's figures are released.

"In July of 2003, Microsoft gave AOL a \$750 million cheque to kill off the browser wars, and let all of us developers go," said Tristan Nitot, president of Mozilla Europe. "Well, now we're back." According to Nitot, Firefox is well on track to reach a 35 per cent share of the European browser market during 2007.

Microsoft revamps Windows anti-piracy system

Microsoft has updated Windows Genuine Advantage (WGA), the software module it installs on Windows XP systems to determine whether or not the operating system is pirated. The new version, which will be included as part of the company's online Automatic Updates, now includes troubleshooting tools.

WGA has been controversial since its launch in April 2006. Some Windows XP users with legitimately purchased copies of the operating system have complained of being erroneously pestered with pop-up messages declaring "This copy of Windows is not genuine," and urging them to buy a legal copy.

The update introduces the new classification of 'indeterminate' for cases in which WGA cannot decide whether a copy of Windows is genuine or not. Microsoft says the latest version of WGA includes new tools that enable Windows users to "troubleshoot the problem and learn more about the results".

However, Michael Cherry, an analyst at Directions on Microsoft, said that the latest update was really an effort by Microsoft to cut the number of technical support calls by putting the onus of sorting out any problems with WGA on the customer.

WGA originally included a routine that contacted Microsoft covertly over the internet to inform the company that a counterfeit copy of Windows was in use. This sparked a US lawsuit in June 2006 that accused Microsoft of installing spyware. Microsoft denied the charge but disabled WGA's 'phone home' functionality. Technology research company IDC has predicted that a user backlash against WGA could drive Windows users to switch to Linux.

New UK search engine "better than Google"

Two new search engines, one ingenious and one quirky, have been launched as trial services. London-based Swamii, which bills itself as a 'What's new engine', works in a similar way to Google's News Alerts service and the Israeli Spotback service. Rather than reporting on all instances of a search topic, Swamii reports only on new mentions of the item.

Swamii (www.swamii.com) lets you enter up to 10 keywords, which it calls 'interests'. It can then email results to you as it finds them, or at regular user-defined time intervals. Swamii CEO Kalem Fletcher says his company's service is superior to rival offerings for several reasons. For example, it searches a large range of sources, including TV listings, blogs, peer-to-peer networks, video and multimedia websites, news sites, shopping sites and job-seeking sites. Each search item can be configured to include or discard searches in various areas of the internet.

Fletcher also claims his company's search algorithms are superior to those of Google's News Alerts, partly because it's better at filtering out irrelevant material.

"The problem with search engines today is that they are so highly geared towards relevance searching. That means that if I search for a topic today, then search again tomorrow, chances are I will get exactly the same results," said Fletcher. Swamii will rely on earning a commission from partners such as eBay and Amazon on purchases that originated using its search engine, rather than using Google's advertising model.

Meanwhile, Microsoft has quietly launched a bizarre experimental search engine interface called Ms Dewey. Played by actress Janina Gavankar, Ms Dewey is a Flash video representation of a rather demanding receptionist who taps on your screen when you don't submit queries and exclaims "Hello? Type something here." A search for 'Arsenal' prompted the cryptic comment, "Are you ready for some corn dogs?" Typing a query about feral cat control produced the comment, "As a child, my parents gave me gender neutral dolls to play with".

The search results from the site (www.msdevery.com) are the same you'd get using Microsoft's Live Search engine.

IN BRIEF

FSF LAUNCHES ANTI-VISTA CAMPAIGN

The Free Software Foundation (FSF) has launched a campaign against Microsoft's Windows Vista operating system, claiming it is an infringement on users' freedoms.

The FSF backs the use of 'Free Software', which does not impose restrictions on the way it is used. It says that Vista is culpable of "daylight theft of users' rights". It also criticises the Trusted Computing platform, aimed at building security into a PC's hardware as well as software.

The FSF describes the platform as "an attempt to turn computers from machines controlled by their user into machines that monitor their user and refuse to operate in ways that manufacturers don't authorize".

MICROSOFT EXEC'S MAC PRAISE "TAKEN OUT OF CONTEXT"

Jim Allchin claims that reports that he told fellow Microsoft executives he would buy an Apple Mac have been taken out of context. Writing on the Windows Vista blog, the co-president of Microsoft's Platform and Services Division said the comments, taken from an email he sent to Bill Gates and Steve Ballmer in 2004, were intended to encourage a change in the way the company was developing Windows at the time.

"This email is nearly three years old, and I was being purposefully dramatic in order to drive home a point," he wrote. "The point being that we needed to change and change quickly. We did: we changed dramatically the development process that was being used and we reset the Windows Vista development project in mid-2004."

THE QUEEN STARTS PODCASTING

The Queen's televised Christmas message in 2006 was also available as a podcast for the first time. The message was available from the Queen's website at www.royal.gov.uk from 3pm on Christmas Day.

Listeners could subscribe in advance on the site to receive the broadcast automatically. The latest broadcast, recorded at Southwark Cathedral, focused on the relationship between different generations, including what the young and old have to offer each other and how faiths can nurture respect for the elderly.

IN BRIEF

» ONE GANG BEHIND HALF OF ALL PHISHING ATTACKS

Over half of the world's phishing emails are thought to come from just one criminal gang. Ken Dunham, director of VeriSign's security research unit, said the gang, called Rock Phish, is "likely responsible for 50 per cent or more of current phishing attacks".

The gang is thought to be working out of Romania or a nearby country. "This group has been in operation since 2004 and is responsible for innovation in both spam and phishing attacks to date, such as pioneering image-spam," said Dunham.

» CRIMINALS HIRE STUDENTS AS HACKERS

Organised criminals are recruiting students to carry out hacker attacks and other crimes. Using tactics reminiscent of the cold war, criminals are approaching high-performing students with offers of sponsorship and then positioning them in companies that they want to attack later.

A report by security company McAfee claims that gangs are attempting to recruit young experts in higher education establishments, in computer clubs and on internet forums.

The students may be asked to commit any number of electronic crimes, including virus writing. Ultimately their work is used for criminal activities such as money laundering.

» UK PHISHING ATTACKS ON THE RISE

Over the past two years, online fraud in the UK has risen 8,000 per cent, the Financial Services Authority (FSA) has told a House of Lords committee. In a report to the committee on science and technology it said it was "very concerned" about the growth in phishing attacks, which it said would rise by 90 per cent in 2007.

The committee is running an inquiry into internet security and heard evidence from the FSA, as well as from representatives for payment association Apacs, Visa and the Royal Bank of Scotland.

The committee heard that, in the first six months of 2005, the number of reported phishing attacks on banks was 312. This rose sharply in the first half of 2006 with the number recorded at 5,059. Scammers managed to steal £23.2 million from victims in the first half of 2006.

Free city-wide wireless internet in Manchester

Manchester City Council has announced plans to offer San Francisco-style city-wide wireless internet access for free to residents and visitors.

If all goes according to plan, around 90 per cent of the 2.2 million people living within the Greater Manchester area will get free wireless internet access in what the council claims will form "the largest single city broadband wireless area in Europe". The wireless catchment area would encompass not only central Manchester but also surrounding boroughs, including Salford and Tameside.

The council said that, although the plan was launched as part of a bid to win "up to £3 million of central government funding" as part of the Digital Challenge Initiative, the "future of Manchester's proposed initiative is not dependent on winning the competition".

"We have been inspired in our plans by the success of wireless and broadband networks in other leading cities around the world," said council leader Sir Richard Leese. "We are initially hoping to establish a 100-square-mile area covered by the network, with this increasing to up to 400 square miles in the future."

"There is nothing on this scale in the UK and I believe it's important that Manchester seizes the initiative and leads the country in developing a truly connected, digital, modern environment from which we would all benefit," said Leese.

Manchester's proposed city-wide WiFi scheme may be the largest in the UK, but it won't be the first. Norwich already offers free WiFi across much of the city, while private company The Cloud is rolling out large-scale WiFi coverage across urban areas, although this service costs £12 per month.

Microsoft sets new format standard

Microsoft has won a major battle to make the XML-based file format it introduced with Office 2007 the de facto standard for storing most non-multimedia data in the world. Critics say the move hands control of a vital standard to a commercial enterprise rather than to a non-partisan body.

Despite objections from IBM, the European Computer Manufacturers Association (ECMA) approved Microsoft's Open XML format as a world standard. ECMA said it would also propose Microsoft's file format for approval to the International Organization for Standardization (ISO), which oversees the world's technology standards.

"[The] ECMA vote is a major milestone in furthering document interoperability. We believe customers will really appreciate the benefits that Open XML provides," said Craig Mundie, chief research and strategy officer at Microsoft.

The company helped to secure approval for Open XML by promising not to use its patents for

the format to block its use by other companies. Jan van den Beld, ECMA's general secretary, said: "The Open XML standard recognises the benefit of backward compatibility preservation of the billions of documents that have already been created, while enabling new future applications of document technology."

ECMA members who backed the decision included Apple, Intel, Novell, Toshiba, the British Library and the US Library of Congress. However, IBM opposed the move, maintaining that the rival Open Document Format (ODF) should be the sole file format standard for Office-style applications.

ODF is already approved as an ISO standard and is the default file format for OpenOffice.org documents, the open-source rival to Microsoft Office. ODF's supporters claim that its non-proprietary nature makes it better suited than the proprietary Open XML as an industry standard.

"ODF is vastly superior to the Open XML spec," wrote IBM's vice-president for open source and

standards, Bob Sutor, in his blog. "ODF is what the world needs today to drive competition, innovation and lower costs for customers. It is an example of a real open standard versus a vendor-dictated spec that documents proprietary products via XML. ODF is about the future, Open XML is about the past. We voted for the future," he wrote.

"Open XML didn't come about by having a group of international experts evolve it and create something good for everyone, it benefits Microsoft first and foremost. Customers want choice of applications, not choice of standards. We don't have lots of choice of web content standards, we have one and the industry takes advantage. Multiple standards fragment the industry, while good community-developed ones build a foundation on which innovation can occur," said Sutor.

Novell says it will support Open XML in its version of OpenOffice, while Corel says WordPerfect Office will support both ODF and Open XML.

iPod FM transmitters become legal

If you are one of the 100,000 UK citizens who have been using a wireless iPod accessory to connect your iPod to a car stereo, you can breathe more easily. Ofcom has finally made it legal for people to use low-power FM transmitters attached to MP3 players.

The 1949 Wireless Telegraphy Act made it illegal for anyone to broadcast over the radio spectrum. Now Ofcom says it is satisfied that the limited range of low-power FM transmitters such as the iTrip will not interfere with FM radio broadcasts. Previously, devices

such as the iTrip were illegal to use but legal to sell in the UK, which is why so many are in use already. Griffin Technology has been selling the iTrip since early 2003 and says it had been seeking a change in the UK broadcasting law ever since. However, the dubious legality of the iTrip prompted the UK reseller AM Micro to stop selling the device.

The iTrip costs around £30, while the RoadTrip, which includes a charger and cradle for the iPod, costs around £40.

Nike+iPod users vulnerable to surveillance

Joggers who use the Nike+iPod Sport Kit are vulnerable to being electronically stalked or burgled. According to students at the University of Washington, anyone with a bit of technical knowledge could track the movements of someone using the recently launched Nike training shoe, which includes a wireless pedometer. The students have posted research on their website that includes pictures of a snooping device they built as a proof of concept.

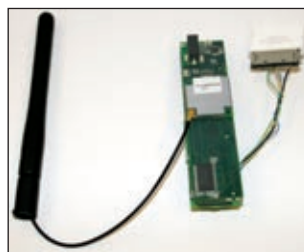
"The wireless capabilities in [the Nike+iPod] can negatively impact a consumer's personal privacy and safety. Someone could use the sensor's broadcast messages to track which locations you visit, and when you visit them," said the students' report.

"As part of our research, we built a number of surveillance tools that malicious individuals could use to track Nike+iPod Sport Kit owners," they wrote. The students' system cost less than \$300 (around £153) and was made from off-the-shelf components.

The Nike+iPod transmits unencrypted RFID data, which can be detected up to 60 feet away. The college report explained how the students hooked up a small and easily concealable 'gumstix' wireless surveillance device to a laptop and also to an iPod running 'iPod Linux'. They wrote software to provide a detailed report on the comings and goings of someone using the Sport Kit.

The students even created a Google Maps-based application to display their victim's jogging route, as well as an SMS-based system to send text alerts to a mobile phone, announcing when the Sport Kit wearer had approached the surveillance device.

"The tracked individuals don't even need to have their iPods with them," they observed. "Any hobbyist, including a technically savvy teenager, could build their own surveillance device, assuming that someone posted detailed instructions and the software on the internet. We currently do not plan to release our software," they wrote.



▲ Students built a \$300 surveillance system to track Nike+iPod users

The report's authors outlined several alarming scenarios. By hiding a gumstix antenna close to their victim's front door, a stalker could be alerted automatically when his prey leaves or enters. Similarly, a burglar could use the system to alert them when their victim has left home.

Sports Kit owners can avoid the risk of surveillance by switching off the Nike sensor, but they will still be vulnerable while they are using it to count steps while jogging. Neither Apple nor Nike would comment on the report.

Apple has sold nearly half a million of the £19 Nike+iPod Sports Kits since its launch in May. The report is available at www.cs.washington.edu/research/systems/privacy.html.

German legislators take aim at violent computer games

Shoot a virtual character in a computer game and you could face jail time in the real world – if you live in Germany.

Legislators in Bavaria and Lower Saxony are trying to pass a law that outlaws "cruel violence on humans or human-looking characters" in computer games. If they are successful, gamers could be sentenced to up to 12 months in jail.

The lawmakers are responding to public outrage over an incident last November, in which German gamer Sebastian Bosse shot 37 people at his old school and then killed himself.

Bavarian interior minister Gunther Beckstein, who is one of the supporters of the proposed law, said that violent computer games had contributed to the tragedy. "It is absolutely beyond any doubt that such killer games desensitise unstable characters and can have a stimulating effect," he claimed.

According to a survey taken shortly after the shooting, 59 per cent of the German public said they were in favour of the proposed legislation. Others believe that the current laws are already very strong. "We [already] have among the most drastic censorship rules for games," said Frank Sliwka, the head of online gaming organisation Deutsche eSport Bund. "Now we are being labelled as a breeding ground for unstable, dysfunctional and violent youngsters."

Make easy money from your PC

Your PC could become a nice little earner with little effort if two new web-based enterprises live up to their promises. One rents your PC's processor power to companies, while another rewards you for using its search service.

Created by Italian Linux developer Andrea Arcangeli, CPUShare is a service that proposes to pay PC owners for their PC's spare processing power. "CPUShare allows home users to profit from the significant power of their hardware that otherwise would be wasted every day," said Arcangeli.

Distributed computing networks such as SETI@home have already proved how effectively the internet can be used to aggregate the spare processing power of PCs to create a virtual supercomputer. CPUShare is the first system to offer remuneration to participants.

CPUShare enables PC owners to auction their spare processor cycles to potential buyers, while taking a small commission. CPUShare client software is available for Windows, Mac and Linux users as a download from the company's website (www.cpushare.com) after registration.

Zotspot, meanwhile, is a new search engine that promises to share advertising revenues with users who use it to search, or persuade their friends to sign up and use it. Google's success has shown how much money there is to be made from targeted advertising based on search criteria. There are already search engines such as goodsearch.com and everyclick.com that donate money derived from search engine advertising to charities. Zotspot (www.zotspot.com) is the first to offer you the choice of pocketing the money yourself or sharing the proceeds with designated non-profit groups of your choice.

IN BRIEF

» SONY PAYS \$750K TO ROOTKIT VICTIMS

Sony has been ordered to compensate customers who installed its CD copy protection on their PCs and then suffered from security problems. Along with legal costs the payout will amount to \$750,000.

A lawsuit in California claims that Sony did not alert users fully to its use of a rootkit-style digital rights management program. This is unlikely to be the last case Sony faces. Texas has reportedly filed a similar one already, and other states are likely to follow. Sony is believed to have sold over 12 million 'infected' CDs in the USA.

» RIAA VICTIM SUES KAZAA

A woman who paid 'compensation' to the US music industry for sharing music files has filed a lawsuit against Sharman Networks, the maker of the Kazaa peer-to-peer software.

Catherine Lewan alleges fraudulent misrepresentation, deceptive trade practices and consumer fraud against Sharman, claiming that the company is directly responsible for copyright violations made by Kazaa users.

In the Chicago, Illinois, court filing, Lewan claimed that Sharman "deceptively" marketed Kazaa to suggest that it allowed free, legal downloads. She says that Sharman encouraged users to store copies of copyright material and created a "share folder" to make this material available to anyone on the Kazaa network, and did so without informing the user.

» MUSIC LEGENDS SUE CONCERT VIDEO SITE

Music legends including Led Zeppelin, Santana, The Grateful Dead and The Doors have set their legal sights on Wolfgang's Vault, the website that specialises in streaming live concerts from the 1960s and 70s.

The groups are suing the site on the basis that it has no right to offer the recordings, which are also used to boost sales of T-shirts and other memorabilia. The Vault (www.wolgangsvault.com) has thousands of audio and video recordings that were originally collected by Bill Graham, the former US concert promoter.

The suit was filed at a Californian district court and targets William Sagan, who bought the assets of Graham for \$5 million over three years ago.

IN BRIEF

» SPAM-FIGHTING DATABASE SHUT DOWN

The Open Relay Database (ORDB), which kept a blacklist of open relays used to send spam, has closed. ORDB kept a database of the IP addresses of verified open SMTP relays, from which systems administrators could block email. However, the non-profit organisation has announced that "the general consensus within the team is that open-relay [blacklists] are no longer the most effective way of preventing spam from entering your network as spammers have changed tactics in recent years".

The DNS and mailing lists have been switched off and the site taken off the net. It had been active for five and a half years.

» GERMAN DUO JAILED OVER TROJAN

Two men have been jailed for their part in infecting 100,000 computers with a Trojan that dialled premium-rate numbers. It is believed they generated profits of €12 million (around £8m).

A court in Osnabrück, north-eastern Germany, sentenced one man to four years in jail and the other to 39 months for their part in the scheme. The program dialled premium-rate 0190 phone numbers to contact an adult site.

The men, aged 31 and 35, amassed their substantial illegal profits from the premium-rate phone calls made through the modems of infected PCs between July 2002 and September 2003.

The immensity of the operation prompted the prosecution to ask the court to fine the men €7.75 million in addition to the jail sentence.

» BBC PUTS CLASSIC TV ON BITTORRENT

The BBC is to make classic programming available in High Definition through a BitTorrent file-sharing service. The deal is part of the BBC's initiative to attract as large an audience as possible and will include popular series such as *Fawlty Towers*, *Red Dwarf*, *Doctor Who* and *The League of Gentlemen*.

Downloads will be protected with DRM, which aims to prevent illegal sharing of the programmes. Downloads will not be free, although a price structure has yet to be finalised. The BBC will offer the programmes through Azureus' BitTorrent client, which includes a BBC channel in its Zudeo software.

New fast, low-power memory spells the end for flash devices

IBM has demonstrated a prototype for a new kind of solid-state storage, which the company says is "more than 500 times faster than flash [memory] while using less than one half the power to write data into a cell".

The new technology, called phase-change memory, can also be "scaled to dimensions smaller than flash". Experts believe that flash-based memory has nearly reached its limit in terms of miniaturisation. Other types of chip fabrication enable the production of ever-smaller chips, which means the possibility of tiny computerised devices. Smaller memory chips will be needed for data storage in these gadgets, and phase-change memory could be the answer.

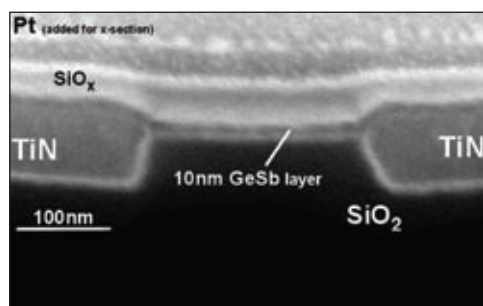
The new semiconductor material is a "germanium-antimony alloy (GeSb) to which small amounts of other elements have been added [doped] to enhance

its properties". This is heated to a high temperature so that it liquefies, cools and freezes into an amorphous state with a high electrical resistance. Its resistance can be lowered by heating it to above its crystallisation point but below its melting point. This transition can be used to store data, and occurs much faster than writing to flash memory.

"Writing data on to flash memory is thousands of times slower than DRAM or SRAM," said an IBM spokesman. "Also, flash memory cells degrade and become unreliable after being rewritten about 100,000 times. This is not a problem in many consumer uses, but is another show-stopper for using flash in applications that must be frequently rewritten, such as computer main memories or the buffer memories in networks or storage systems."

Phase-change memory could herald the long-anticipated arrival of a new class of PC notebook computer that replaces traditional hard disks with solid-state storage. This new class of portable computer will be smaller, run longer and cooler and offer considerable benefits in terms of reliability and ruggedness.

IBM is co-developing the technology with two companies, Quimonda and Macronix, which specialise in solid-state memory. Intel and STMicroelectronics have also been working as partners on the same technology, as well as flash memory giant Samsung. The first phase-change memory chips could be produced as early as the end of this year.



▲ Changing the GeSb layer's state alters its electrical resistance, allowing data to be stored and read

Image recognition automatically indexes digital photos

A technology that can name and add descriptive meta-tags to pictures and video automatically has been demonstrated at the Information Society Technologies (IST) 2006 event in Helsinki. The EU-backed technology is being developed by Acemedia, a consortium of researchers working on a unified approach to managing multimedia content. Acemedia members include Motorola, Philips, France Telecom and universities including London's Queen Mary College.

As anyone who has used a digital camera or camcorder will know, searching an archive of content stored on a PC is tricky and involves a tedious process of opening and renaming hundreds of cryptically named files, the titles of which offer no clue as to the file's subject matter.

The Acemedia prototype technology uses image recognition software to automate this process. It searches for recognisable collections of pixels, which could be faces, the sky, the sea or a vehicle. Then, by aggregating items that it has recognised, the software attempts to tag the scene with a name such as 'party', 'wedding' or 'beach'.

"People don't want to spend time managing content manually; they just want to be able to view it whenever and however they want. For that to happen, multimedia content needs to become intelligent," said Acemedia's Dr Paola Hobson.

Acemedia expects it will be at least another four years before a commercial product appears.

Sony pipes music through your body

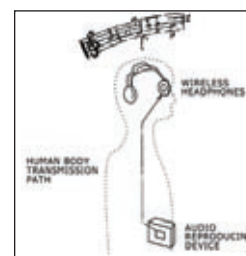
Sony has developed a wireless headphone for music players that transmits audio data through the human body. In a patent filed in the US, the company said its new approach is a better solution than either Bluetooth or infrared (IrDA).

The human body has properties both as a conductor and as a dielectric (a material that is highly resistant to electric current). Sony's patented technology exploits this dual nature to enable data to be carried along the body from a music player to the headphones.

Sony is not the first company to use the human body as a conduit for data, but until now these systems have required "the transmitting and receiving electrodes of a portable music reproducing device and headphones to be in contact with a human body at all times, and has a problem in usability because the electrodes give an unpleasant feeling or a feeling of discomfort," Sony explained in its patent.

Sony's new technology enables data to be transmitted through a conducting fabric, so the electrodes needn't touch the skin directly. Sony said its new technology is designed to work "with secrecy, low power consumption and without interfering with [other] communication systems".

Bluetooth systems suffer interference from sources such as microwave ovens and wireless networks. Infrared technology needs to be within a 'line of sight range' to work properly.



▲ Sony's patent depicts the body transmitting data